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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/828,159	04/09/2001	Toshiya Uemura	P 280087 T36-133137M/KOH	7726

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EXAMINER
LEE, EUGENE

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/828,159	UEMURA, TOSHIYA
	Examiner	Art Unit
	Eugene Lee	2815

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-16,18-20,22,23,26-36,38 and 39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *14-16,18 and 22* is/are allowed.

6)☒ Claim(s) *26-36 and 39* is/are rejected.

7)☒ Claim(s) *19,20,23 and 38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/365,832.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/23/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 19, 20, 23, and 38 are objected to because of the following informalities: there is a grammatical error in the limitation "first and a second bonding pads" in line 4 of claim 19. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 28 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear whether the substrate claimed in line 2 of claim 28 is the same as the substrate claimed in line 6 of claim 26. As the claims are now written, it appears there are two substrates in the same light-emitting element. Appropriate clarification and/or correction are required.

Regarding claim 35, it is unclear what the limitation "**same**" is referring to in the limitation "first and second lead frames and said bonding wires are connected to a same surface of said first and second bonding pads."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 26 thru 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Genriyou 10-151794 JPO in view of Nemoto et al. 6,025,213 in view of Yamada et al. 6,239,490 B1 in view of Oshio et al. 6,274,890 B1. Genriyou discloses (see, for example, figure [1 (A)]) a semiconductor light-emitting apparatus of a flip chip bonding type comprising a concave/convex lens (transparent base) 101, light emitting chip (light-emitting element) 102, and adhesive 104. In the last paragraph of the applicant's translation, Genriyou states light emitting chips comprising a semiconductor layer (light-emitting layer) formed on an insulating substrate such as sapphire. In the same paragraph, Genriyou states the electrode of a positive electrode form on the field side which counters through a semiconductor. The positive and negative electrodes are shown on top of the light emitting chip 102 and each electrode is connected to its respective external electrode (first and second lead frames) 105 by way of conductive wires 103. Genriyou does not disclose first and second bonding pads. However, Nemoto discloses (see, for example, FIG. 15E) a semiconductor light-emitting device package comprising package window portion 32, lead frame 58 and electrode pads (first and second bonding pads) 42. In column 10, lines 66 to column 11, line 4, Nemoto states that the transparent base is bonded to a lead frame through the electrode pads. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the electrode pads (first and second bonding pads) of Nemoto in

Genriyou's invention in order to stably mount the concave/convex lens (base) to the external electrodes (first and second lead frames).

Genriyou in view of Nemoto does not disclose a first electrode comprising a light non-transmissible material. However, Yamada discloses (see, for example, FIG. 2) a light emitting device comprising a p-contact 34 that forms the electrode 33. In column 4, lines 45-50, Yamada discloses that the p-contact is formed of palladium, a metal. Metals are reflective and light non-transmissible. Therefore any light that is generated in a semiconductor layer will reflect off the palladium layer and go towards the opposite direction. In column 6, lines 45-61, Yamada discloses that an electrode made of palladium will reduce the voltage required to drive a given current through a Group III-nitride semiconductor device. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a first electrode comprising a light non-transmissible material in order to have an conductive electrical contact and to reduce the voltage required to drive a given current in the light emitting chip.

Genriyou in view of Nemoto in view of Yamada does not disclose a fluorescent material which is adjacent to said substrate and on an opposite side of said substrate from said light-emitting layer. However, Oshio discloses (see, for example, FIG. 1) a light emitting device comprising a semiconductor light emitting element 1, and adhesive 3. In column 13, lines 61-column 14, lines 4, Oshio discloses mixing a fluorescent material into the adhesive in order to produce high wavelength-converting efficiency and a high light take-out effeciency. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a fluorescent material which is adjacent to said substrate and on an opposite side of said substrate

from said light-emitting layer in order to produce high wavelength-converting efficiency and a high light take-out efficiency.

Genriyou in view of Nemoto in view of Yamada does not disclose a sealing resin formed over said transparent base and said GaN semiconductor light-emitting device. However, Oshio discloses a projection (sealing resin) 9 made of a thermosetting resin. In column 6, lines 1-4, Oshio teaches that the projection is used as a lens. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a sealing resin formed over said transparent base and said GaN semiconductor light-emitting device in order to focus the light generated from the light-emitting chip.

Regarding claim 30, see Genriyou wherein a lead frame 105 extends longitudinally around the light emitting chip 102.

6. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Genriyou 10-151794 JPO in view of Oshio et al. 6,274,890 in view of Yamada et al. 6,239,490 B1. Genriyou discloses (see, for example, figure [1 (A)]) a semiconductor light-emitting apparatus of a flip chip bonding type comprising a light transmitting adhesive (transparent base) 104, light emitting chip (light emitting element) 102, wires 103, bump (foreign member), and outer electrode (lead frame) 105. A positive and negative electrode reside on top of the light emitting chip. Genriyou does not disclose the transparent base comprising a fluorescent material. However, Oshio discloses (see, for example, FIG. 1) a light emitting device comprising a semiconductor light emitting element 1, and adhesive 3. In column 13, lines 61-column 14, lines 4, Oshio discloses mixing a fluorescent material into the adhesive in order to produce high wavelength-converting

efficiency and a high light take-out efficiency. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a transparent base comprising a fluorescent material in order to produce high wavelength-converting efficiency and a high light take-out efficiency.

Genriyou in view of Oshio in view of Yamada does not disclose the positive electrode reflecting light emitted from the light emitted from the light-emitting element. However, Yamada discloses (see, for example, FIG. 2) a light emitting device comprising a p-contact 34 that forms the electrode 33. In column 4, lines 45-50, Yamada states the p-contact is formed of palladium, a metal. Metals are reflective and light non-transmissible. Therefore any light that is generated in a semiconductor layer will reflect off the palladium layer and go towards the opposite direction. In column 6, lines 45-61, Yamada discloses that an electrode made of palladium will reduce the voltage required to drive a given current through a Group III-nitride semiconductor device. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have the positive electrode reflecting light emitted from the light emitted from the light-emitting element in order to have an conductive electrical contact and to reduce the voltage required to drive a given current in the light emitting chip.

Allowable Subject Matter

7. Claims 14 thru 16, 18, and 22 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: The references of record, either singularly or in combination, do not teach or suggest at least a semiconductor light-emitting apparatus of a flip-chip bonding type, comprising: a transparent

base comprising an inorganic material, which has on one side thereof a first bonding pad and a second bonding pad; a semiconductor light-emitting element, wherein said positive electrode is connected by a bonding wire to a surface of one of said first and second boding pads, one of said pair of lead frames being connected to said surface, and wherein the inorganic material comprises a fluorescent material dispersed therein.

Response to Arguments

9. Applicant's arguments with respect to claims 14-16, 18-20, 22, 23, 26-36, 38, and 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eugene Lee
June 17, 2004

TOM THOMAS
SUPERVISORY PATENT EXAMINER
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